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Have Chinese firms learnt from their prior technology in-licensing?

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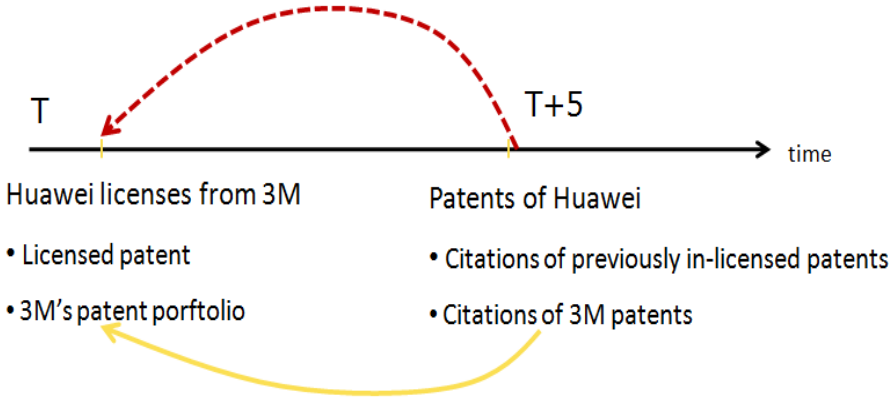
Abstract

Industrial innovation is an important driving force for regional and national economic growth and competitive advantage, which derive largely from technological capabilities of industrial firms in a region or a nation (Malecki, 1991). Firms are able to build their technological capability through internal-R&D, internalizing external technologies by technology transfer, and the spillover effects from other industrial firms (Sun, 2002). China clearly understands this and is determined to upgrade the driving force of its economic growth from labor-intensive manufacturing industries to more knowledge-intensive ones led by innovation-oriented firms (Altenburg et al., 2008; Alcorta et al., 2009).While it is widely recognized that internal R&D has contributed most to the innovation performance of Chinese industrial firms (Sun and Du, 2010), however, whether Chinese firms have learnt from their external technology in-licensing to build their own technological capabilities remains a concern. Hard evidence on the direct link between licensees' new knowledge creation to their previously licensed-in technology at a firm level is rare to find. Therefore, this paper seeks to answer this question by investigating whether a new patent filed by a Chinese firm cites a 'prior art' that is the patent in-licensed from an external partner previously.



We use a unique panel dataset based on the patent licensing registration at the China's State of Intellectual Property Office (SIPO) from a period from 2000 to 2009 for our investigation. In order to generate a sample that is large enough for our research purpose and allow sufficient time for each licensee firm to learn and generate new technologies, we took an observation period from 2000 to 2004 and then set learning time as being a five-year period

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after the in-licensing, which is consistent with several prior studies that analyzed effects of R&D efforts, external technology-oriented acquisitions, and strategic R&D alliances on subsequent patent applications. A sample of 83 Chinese large firms (employees more than 500) in the electronic sector is selected. In total, there are 102 firm-year observations, with at least one in-license agreement in the observation year. A number of firm-level or patent-level control variables are included in the probit model to test the main effect.

We found that the sample firms have successfully learnt from their previously in-licensed technologies when patent citations of licensee firms to their licensed patents are used to identify those successful learners. We conclude our paper through an in-depth discussion on the implications of our findings for Chinese firms, Chinese innovation policy making and foreign firms.

Key Words: technological learning, technology license, technology capability, patent citations, China

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